repeated (block **540**). If, on the other hand, there are rows in sensor array **400** that have not been sampled in accordance with blocks **500-520** (the "No" prong of block **525**), the next row is selected (block **530**) and the acts of blocks **500-525** are performed.

[0018] In one illustrative embodiment: sensor array **400** comprises a 16×32 capacitive grid, providing 48 output channels; Vcc is 3.3 volts; storage capacitor **415** is approximately 10,000 picofarads, an average row capacitance value is approximately 12 picofarads; an average column capacitance value is approximately 9 picofarads; the average change in capacitance of a row or column electrode due to a user's finger touching sensor array **400** is approximately 0.2 picofarads; the threshold value at which a digital capacitance value is obtained is 1.6 volts; and the rate at which MUX circuits **410**, **420** and **425** are switched is 6 megahertz. It has been found, for these values, that its takes approximately 580-600 sample cycles to charge storage capacitor **415** to the threshold voltage. In one embodiment, the digital capacitance value is, in fact, a count of the number of sampling cycles required to charge storage capacitor **415** to the threshold value. One of ordinary skill in the art will recognize that this value is directly related to the sensor element's (e.g., row or column) capacitance value. In this embodiment, scan circuit **325** (in conjunction with MUX circuits **410**, **420** and **425** and storage capacitor **415**) measures each of the **48** sensor array outputs 125 times each second, with each measurement comprising a 10-bit value (unsigned integer). Referring to the 48 measurements acquired by scan circuit **325** from sensor array **400** in each of the 125 epochs as a frame, the illustrative track pad sensor device generates:

$$\left(\frac{48\text{ channels}}{\text{frame}}\right)\left(\frac{10\text{ bits}}{\text{channel}}\right)\left(\frac{125\text{ frames}}{\text{second}}\right)\left(\frac{1\text{ byte}}{8\text{ bits}}\right) = 7{,}500\text{ bytes/second.}$$

[0019] As noted with respect to **FIG. 2** and as further shown in **FIG. 3**, driver application **350** is executed general purpose processing unit **360** that is also responsible for executing user applications and tasks, e.g., **365**. That is, in accordance with the invention raw track pad sensor data is analyzed by one, or more, general purpose processing units associated with the host computer system and not by a dedicated processor or processing circuit(s) associated with track pad device **300**. A direct consequence of the architecture of **FIGS. 2 and 3** is that the processing resources (e.g., CPUS) tasked with analyzing track pad sensor data must be shared with other computer system processing needs such as other system level and user level applications.

[0020] Various changes in the materials, components and circuit elements of the described embodiments are possible without departing from the scope of the following claims. Consider, for example, the system of **FIG. 3**. Other embodiments could include a smaller (e.g., 10×16) or larger (e.g., 32×32) sensor array **305**. Further, frame rates other than 125 Hertz ("Hz") and sample resolutions other than 10 bits are possible. It will also be understood that the host computer system may comprise more than one general purpose processing unit (e.g., processor **250**). In addition, some of the circuitry identified in **FIGS. 2 and 3** as being integral to track pad device **205** or **300** may be embodied in circuitry also used for other functions. For example, transmit circuits **230** and **330** may be shared by other USB input devices such as, for example, a keyboard. In addition, one of ordinary skill in the art will recognize that the invention is also applicable to track pad sensor devices that are pixilated rather that row-column addressable. It will be further recognized that the operational procedure outlined in **FIG. 5** may be modified. For instance, sensor column values may be obtained before sensor row values. Alternatively, sensor row and sensor column data may be interlaced and/or measured at the same time. In any event, it will be recognized that scan circuit **325** measures sensor pad characteristic values (e.g., capacitance or resistance) in a set order and that this order must be known or communicated to driver application **350**. In yet another embodiment, scan circuit **325** may measure sensor characteristic values in any convenient manner and reorder them into a sequence known or expected by driver application **350** prior to transmission by transmit circuit **330**.

1. A track pad input device, comprising:

a capacitive track pad sensor having a plurality of sensing elements, each sensing element associated with a region of the capacitive track pad sensor;

a data acquisition circuit electrically coupled to the capacitive track pad sensor for selectively encoding digital capacitance values for each of the plurality of sensing elements; and

a communication circuit for transmitting the digital capacitance values to a host processor for processing, wherein the host processor is also at least partially responsible for executing user-level tasks.

2. The track pad input device of claim 1, wherein the communication circuit comprises a circuit for transmitting the digital capacitance values in accordance with a universal serial bus protocol.

3. The track pad input device of claim 1, wherein the data acquisition circuit is adapted to repeatedly encoding digital capacitance values for each of the plurality of sensing elements.

4. The track pad input device of claim 1, wherein the track pad input device does not include a means for analyzing the encoded digital capacitance values.

5. A track pad input device consisting essentially of:

a track pad sensor having a plurality of sensing elements, each sensing element associated with a region of the track pad sensor;

a data acquisition circuit for selectively encoding a digital value representing a characteristic for each of the plurality of sensing elements; and

a communication circuit for transmitting the encoded digital values to a host processor for analysis, wherein the host processor is also at least partially responsible for executing user-level tasks.

6. The track pad input device of claim 5, wherein the sensor element comprises a resistive sensor array.

7. The track pad input device of claim 5, wherein the sensor element comprises a capacitive sensor array and each encoded digital value represents a capacitance value.

8. The track pad input device of claim 5, wherein the data acquisition circuit is adapted to repeatedly encode digital values for each of the plurality of sensing elements.